



SOAREX-8 (Sub-Orbital Aerodynamic Re-entry EXperiments)

Problem Statement

- Quick sample return capabilities from the ISS using Exo-Brake passive re-entry/de-orbit device and satellite-to-satellite communications
- This opportunity allows for the testing of a scaled up Exo-Brake from those tested in orbit on TES-3p (November 2013) and TES-4 (July 2014).
- Potential customers include NASA

Technology Development Team

- Marcus Murbach, NASA Ames Research Center, marcus.s.murbach@nasa.gov
- Center Discretionary Funds, NESC.
- Hypersonic EDL Technology Project.
- NASA ARC Internal Funding.

Proposed Flight Experiment

Experiment Readiness:

- The experiments are planned to be ready in early fall 2014

Test Vehicles:

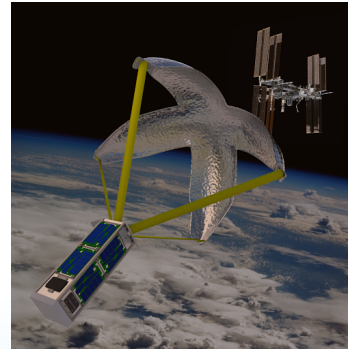
- sRLV, Terrier/Peregrine sounding rocket

Test Environment:

- High altitude/free molecular flow, transition into continuum flow for testing Exo-Brake
- Smaller version has previously flown in very high altitude (400 km)/free molecular flow

Test Apparatus Description:

- SOAREX-8 (Sub-Orbital Aerodynamic Re-entry EXperiments) is a 25x25x75 cm payload that will house the Exo-Brake (pictured below) and the innovative communications and power systems.



Technology Maturation

- The Exo-Brake has flown in an orbital environment but not at the desirable large scale and therefore at TRL 6.
- The Iridium satellite-to-satellite communication system has worked at an orbital level but not a suborbital level and therefore a TRL 6.
- No deadline to reach TRL 6

Objective of Proposed Experiment

- Successful deployment of the Exo-Brake with data of its descent received via Iridium modem.
- Flight data will include position (altitude) over time that can be used to calculate the drag coefficient of the Exo-Brake in free molecular flow.